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THE **BOEING** COMPANY

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TITLE FLIGHT ARTICLE MASS PROPERTIES REPORT FOR MINUTEMAN  
WING I COMPONENTS, MISSILES 708-858

MODEL NO. WB-133A CONTRACT NO. AF04(694)-46

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## SUMMARY

This report contains mass property summaries of the Boeing components for a series of Operational Wing I Minuteman missiles. The serialized components included in the data for each missile are those committed to that particular missile during the course of production in Seattle and may not be the ones finally installed during missile assembly at Air Force Plant 77.

1.0 INTRODUCTION

1.1 REFERENCES

- 1.1.1 BSD Exhibit 62-45, "Mass Properties Control Data for WS-133A Dated 3 August 1962.
- 1.1.2 CCN 258 (BSD-63MSN-2597) to AFO4(647)-580 Dated 5 October 1962.
- 1.1.3 Boeing Document D2-13943, "Flight Article Mass Properties Report for CILI Installations.
- 1.1.4 Boeing Document D2-13944-501, "Flight Article Mass Properties Report for Missile 501 Components."
- 1.1.5 Boeing Document D2-13957-4 "Statistical Means and Dispersions for the Mass Properties of Boeing Components for the Wing I Operational Minuteman Missile - March 1, 1963."
- 1.1.6 Boeing Document D2-13945-xxx "Air Force Plant 77 Flight Article Mass Properties Report for Missile xxx."

1.2 COMPONENT SERIAL NUMBERS

Component serial numbers appear on the data summary sheet for each missile. See pages 9 through 18.

1.3 DISCUSSION

This weight report for the Boeing components of a series of Operational Wing I Minuteman missiles is presented in accordance with section 3.1.1 of BSD Exhibit 62-45 (reference 1.1.1) as authorized by CCN 258 to AFO4(647)-580 (reference 1.1.2). In order to conform more closely to the requirements of the BSD exhibit, some changes have been made to the format used in earlier reports in this series. Since the data is to be reported monthly, this report contains data for a series of missiles instead of a single missile as in the past. The data for each missile reported includes the mass properties of the major components assigned to each missile in the manufacturing records at Seattle. (These may not be the same components finally assembled together at Air Force Plant 77. See Reference 1.1.6 for the final configuration). Mean mass properties are used for components other than the interstages, aft skirt, and base heat deflectors since the weights for these remaining items are small. Mean and dispersion back-up data for these items can be found in the latest quarterly means and dispersions report (reference 1.1.5).

The data presented in this report consist of (1) sectional summaries of the total Boeing weight responsibility for each missile covered by this report, (2) a sectional summary of the components whose mean weights are used in lieu of actual weights, (3) summary check lists by missile section, (4) a list of Engineering Change Proposals incorporated on the hardware included in this report, and (5) actual weighing records for the interstages, the aft skirt, and the base heat deflectors.

The actual weighing records for the major components covered by this report can be found in section 6 (pages 22 through 59). In order to limit the size of this report, weighing diagrams and inventory lists have been omitted for all but the first unit of each interstage and skirt since the components have all been weighed in the "complete" condition. However, these records are on file and can be supplied if necessary. The change records found in section 6 are listed in order by serial number for each major component in order to assist in cross referencing the components in case of substitution at a later date.

1.4 CTLI PROVISIONS

The only CTLI provisions incorporated into this report are those components which are installed on every operational missile. The mass properties data for CTLI components which will be added at Vandenberg Air Force Base are reported in reference 1.1.3.

1.5 WEIGHING PROCEDURES

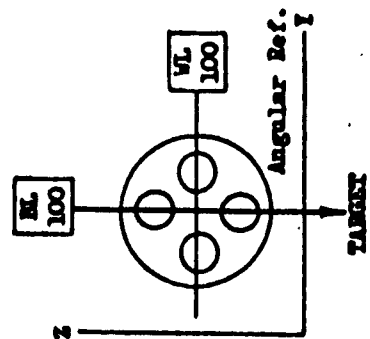
A description of the weighing procedures and an accuracy statement will be found in reference 1.1.4.

1.6 ENGINEERING CHANGE PROPOSAL (ECP) SUMMARY

See page 21 for a list of the ECP's incorporated on the Boeing components covered by this report. The ECP's listed are those not covered by the latest revision to "Model Specification for Guided Missile Main Assemblage, S-133-1000", Dated 12 March 1963 and amended by SCN 1 through SCN 8.



**Reference**  
**25-19999**  
**DCN-E**



3.1 MISSILE NO. 708 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000160						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10 <sup>-3</sup>	
						LONG. °	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.18	94.86	106.88	111.20	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.45	60.05	100.24	101.29	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.96		61.04	99.32	100.42	.011	.006
22	45	Interstage 2-3			75.34	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			39.02	149.57	105.44	109.46	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			256.42	67.22	100.08	100.78	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	218.75		68.54	99.37	100.13	.032	.020
37	47	Interstage 1-2			139.43	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			351.44	68.96	100.66	101.09	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1063.39					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	320.71						

2-5550-0-58 \*Boeing Section Stations (See Missile Station Diagram)

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3.2 MISSILE NO. 710 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000181						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x 10 <sup>-3</sup>	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.12	94.75	106.90	111.23	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			123.27	60.10	100.07	101.40	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	102.78		61.10	99.12	100.57	.011	.006
22	45	Interstage 2-3			75.92	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.99	149.54	105.45	109.47	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			253.34	67.42	99.90	101.18	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	215.67		68.79	99.16	100.58	.032	.020
37	47	Interstage 1-2			137.61	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			57.96	219.34	110.71	118.43	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			350.69	69.06	100.77	100.90	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1058.92					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	318.45						

\*Boeing Section Stations (See Missile Station Diagram)

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3.3 MISSILE NO. 713 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000161						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10-3	
						LONG. °	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.20	94.90	106.87	111.19	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.31	60.07	100.05	101.15	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned Portion	Aero							
20			Base							
21			Jett	101.82		61.07	99.10	100.25	.011	.006
22	45	Interstage 2-3			75.23	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.95	149.50	105.45	109.48	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			252.55	66.97	100.16	101.24	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned Portion	Aero							
35			Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	214.88		68.27	99.45	100.64	.032	.020
37	47	Interstage 1-2			137.15	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.02	219.44	110.70	118.41	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			350.04	69.03	100.61	100.85	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1055.47					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	316.70						

\*Boeing Section Stations (See Missile Station Diagram)

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3.4 MISSILE NO. 715 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000162						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10-3	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.27	95.03	106.85	111.15	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			121.61	60.09	100.23	101.55	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.12		61.10	99.30	100.73	.011	.006
22	45	Interstage 2-3			74.73	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.93	149.48	105.45	109.48	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			255.92	67.57	99.89	100.94	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	218.25		68.96	99.15	100.31	.032	.020
37	47	Interstage 1-2			139.13	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.06	219.51	110.69	118.39	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			350.79	69.13	100.60	100.90	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1060.46					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	319.37						

2-5550-0-58 \*Boeing Section Stations (See Missile Station Diagram)

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3.5 MISSILE NO. 717 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000163						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> ×10-3	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.25	94.99	106.85	111.16	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.28	59.98	100.23	101.10	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.79		60.96	99.31	100.19	.011	.006
22	45	Interstage 2-3			75.21	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			39.40	149.97	105.39	109.37	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			252.17	67.40	99.83	101.01	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	214.50		68.77	99.07	100.38	.032	.020
37	47	Interstage 1-2			136.93	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.04	219.47	110.69	118.40	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			354.14	69.06	100.59	100.84	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1059.44					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	316.29						

\*Boeing Section Stations (See Missile Station Diagram)

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3.6 MISSILE NO. 731 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000183						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10-3	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.13	94.77	106.90	111.23	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			123.39	60.08	100.13	101.24	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	102.90		61.06	99.20	100.38	.011	.006
22	45	Interstage 2-3			76.00	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			39.03	149.58	105.44	109.46	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			253.24	67.39	99.98	101.43	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	215.57		68.76	99.24	100.88	.032	.020
37	47	Interstage 1-2			137.56	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			351.59	69.18	100.67	100.70	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1060.05					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	318.47						

\*Boeing Section Stations (See Missile Station Diagram)

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3.7 MISSILE NO. 745 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000184						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> ×10 <sup>-3</sup>	
						LONG. °	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.19	94.88	106.87	111.19	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			121.69	60.00	100.28	101.19	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.20		60.82	99.35	100.30	.011	.006
22	45	Interstage 2-3			74.80	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.95	149.50	105.45	109.49	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			253.15	67.64	99.81	101.31	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	215.48		69.05	99.03	100.73	.032	.020
37	47	Interstage 1-2			137.50	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.10	219.57	110.43	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			354.64	68.80	100.38	100.89	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1060.04					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	316.68						

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3.8 MISSILE NO. 776 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000186						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10 <sup>-3</sup>	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.14	94.78	106.89	111.22	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			121.66	60.11	100.60	101.02	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.17		61.12	99.74	100.09	.011	.006
22	45	Interstage 2-3			74.78	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.84	149.38	105.47	109.51	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			254.19	67.51	99.78	101.10	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	216.52		68.89	99.00	100.49	.032	.020
37	47	Interstage 1-2			138.11	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.12	219.61	110.68	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			348.74	69.12	100.66	100.71	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1055.6					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	317.69						

\*Boeing Section Stations (See Missile Station Diagram)

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3.9 MISSILE NO. 816 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000182						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10 <sup>-3</sup>	
						LONG. *	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.22	94.94	106.86	111.18	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.19	60.15	100.39	101.18	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21		Jett		101.70		61.16	99.50	100.29	.011	.006
22	45	Interstage 2-3			75.15	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.94	149.49	105.45	109.48	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			253.62	67.49	99.80	101.05	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36		Jett		215.95		68.88	99.02	100.43	.032	.020
37	47	Interstage 1-2			137.78	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			57.99	219.39	110.70	116.42	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		114.6	100.0	100.0	0	0
44	49	Skirt			351.24	68.96	100.73	100.82	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1058.15					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	317.65						

\*Boeing Section Stations (See Missile Station Diagram)

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3.10 MISSILE NO. 858 WEIGHT AND BALANCE SUMMARY MAJOR COMPONENTS S/N 0000185						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10-3	
						LONG.*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0	0	0
8			Silo							
9			Aero							
10	44	3rd Stage Engine			20.18	94.86	106.88	111.20	0	.004
11			Silo	0.6		89.2	110.3	117.7	0	0
12			Aero							
13			Base	0.4		131.8	100.0	100.0	0	0
14	45	Interstage 2-3			122.07	59.87	100.33	101.23	.012	.007
15		(Fwd)	Silo							
16			Aero							
17			Base	4.6		58.7	108.7	110.0	0	0
18			Silo	1.7		61.7	100.4	100.6	0	0
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	101.58		60.83	99.43	100.35	.011	.006
22	45	Interstage 2-3			75.07	79.02	99.39	101.80	.008	.004
23		(Aft)	Silo	2.6		81.2	100.6	101.0	0	0
24			Aero							
25	46	2nd Stage Engine			38.87	149.41	105.46	109.50	.001	.021
26			Silo	1.0		103.9	112.3	121.2	0	0
27			Aero							
28			Base	3.3		187.7	100.0	100.0	0	0
29	47	Interstage 1-2			254.63	67.45	99.98	101.23	.036	.023
30		(Fwd)	Silo							
31			Aero							
32			Base	5.1		61.0	109.3	111.7	0	0
33			Silo	4.9		67.2	100.0	100.0	.001	0
34		Jettisoned	Aero							
35		Portion	Base	7.3		67.4	100.3	100.2	.001	.001
36			Jett	216.96		68.82	99.25	100.64	.032	.020
37	47	Interstage 1-2			138.37	96.45	101.25	100.85	.028	.016
38		(Aft)	Silo	5.6		97.6	101.5	102.6	.001	.001
39			Aero							
40	48	1st Stage Engine			58.09	219.56	110.68	118.38	.003	.107
41			Silo	2.4		160.5	117.2	129.7	0	.002
42			Aero							
43			Base	3.0		314.6	100.0	100.0	0	0
44	49	Skirt			350.09	69.02	100.70	100.96	.088	.052
45			Silo	32.0		67.9	100.1	100.2	.008	.005
46			Aero							
47			Base	26.8		68.2	100.8	101.2	.007	.004
48		MISSILE			1058.39					
49			Silo	50.8						
50			Aero							
51			Base	50.5						
52			Jett	318.54						

\*Boeing Section Stations (See Missile Station Diagram)

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3.11 WEIGHT AND BALANCE SUMMARY MEAN WEIGHT COMPONENTS** (APPLICABLE TO ALL MISSILES)						REPORT NO. _____ DATE _____				
LINE	SEC.	DESCRIPTION	DATA	EXPENDED WEIGHT (LB)	TOTAL WEIGHT (LB)	CENTER OF GRAVITY			INERTIA SLUG FT <sup>2</sup> x10 <sup>-3</sup>	
						LONG*	LAT.	VERT.	ROLL	PITCH
1	41	RV Spacer								
2			Silo							
3			Aero							
4	39	CTLI Section								
5			Silo							
6			Aero							
7	42	G&C Section			1.02	80.9	100.0	100.0		
8			Silo							
9			Aero							
10	44	3rd Stage Engine			14.02	78.05	109.90	116.12		
11			Silo							
12			Aero							
13			Base							
14	45	Interstage 2-3 (Fwd)			20.43	59.50	105.46	107.81		
15			Silo							
16			Aero							
17			Base							
18			Silo							
19		Jettisoned	Aero							
20		Portion	Base							
21			Jett	9.44		61.56	101.43	104.88		
22	45	Interstage 2-3 (Aft)			8.16	81.65	99.34	98.49		
23			Silo							
24			Aero							
25	46	2nd Stage Engine			18.48	103.86	111.49	119.98		
26			Silo							
27			Aero							
28			Base							
29	47	Interstage 1-2 (Fwd)			23.65	64.87	105.68	111.26		
30			Silo							
31			Aero							
32			Base							
33			Silo							
34		Jettisoned	Aero							
35		Portion	Base							
36			Jett	10.78		68.79	97.93	108.77		
37	47	Interstage 1-2 (Aft)			10.00	97.15	103.19	102.75		
38			Silo							
39			Aero							
40	48	1st Stage Engine			36.70	161.96	116.91	129.10		
41			Silo							
42			Aero							
43			Base							
44	49	Skirt			13.19	62.52	105.50	109.22		
45			Silo							
46			Aero							
47			Base							
48		MISSILE			145.65					
49			Silo							
50			Aero							
51			Base							
52			Jett							

\* Boeing Section Stations (See Missile Diagram)

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\*\* See Check List on Page 20  
for details.

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# **ENGINEERING CHANGE PROPOSAL (ECP) INCORPORATION** **APPLICABLE TO WING I MISSILES 708 THROUGH 858**

The following ECP's have not been incorporated into "Model Specification Guided Missile Main Assemblage (S-133-1000)" Dated 12 March 1962 and amended by SCN 1 through SCN 8. However, the mass properties of these ECP's have been incorporated into this report unless otherwise noted.

ECP NO. (WS-133A-BO-)	ECP TITLE	STAGE	WEIGHT CHANGE	WEIGHT CHANGE INCORPORATED IN THIS REPORT
116-9	Linear Shaped Charge Destruct System - First Stage Engine	2	-.1	Yes
173	Cancellation of MRCN 6012	3	-.6	Yes
201	First Stage Thermal Insulation Revision-Operational Wing I Missiles	1	-1.4	Yes
232	Interstage Compatibility for CTLI Kit	All	Negl.	Yes
233	Provisioning of Lower Raceway Foam-First Stage Engine	1	-.4	Yes
236	Second Stage CTLI and Operational Raceway Foam Revisions	2	Negl.	Yes
259	Removal of Ramps from Stage I Forward Joint - Operational Wing I	1	-1.8	Yes
265	Lengthen Attach Bolts for Stage I Aft Raceway Cap	1	Negl.	Yes
277	Removal of Ramps from Second Stage Engine - Wing I Operational	2	-2.6	Yes
287	Boeing Support of Hercules Ignitor Basket Change	3	Negl.	Yes
326	Insulation of Autonetics Connector on Stage III Operational Pressure Transducer	3	Negl.	Yes
372	Insulation of Ordnance at R/W Cutout 1-2 and 2-3 Interstages	2&3	Negl.	Yes
540	Potting and Bonding Deletion for Vandenberg Air Force Base Missiles	1,2,3	-	No*

\* ECP 540 postpones the potting of certain components on scheduled CTLI missiles until final installation at Vandenberg Air Force Base. Since the potting is considered part of the operational weight, its mass properties are still included in this report even though it will be applied at VAFB.

6.1.1 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR COMPONENT		BOEING INTERSTAGE 2-3		CONTRACT NO.		AF04(64)-046		REPORT NO.		OPR-2039			
MODEL NO.		WS-133		LOT NO.				DATE		4/12/63			
SERIAL NO.		0000160		DRAWING NO.		25-27204-64		PREPARED		T. VOGEL			
				U.O. MISSILE		708		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS					
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT				
1													
2	25-27204-64	Body Section (As Weighed)	169.20	67.52	11,424.8	99.28	16,798.0	100.86	17,066.0				
3													
4													
5		ADD:	0										
6													
7													
8		DEDUCT:	0										
9													
10													
11	25-27204-64	Body Section (Complete)	169.20	67.52	11,424.8	99.28	16,798.0	100.86	17,066.0				
12													
13													
14													
15													
16													
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SERIAL NO. 0000160				6.1.1.1 ACTUAL WEIGHT RECORD - INTERSTAGE 2-3			
U/O MISSILE 708		DRAWING NO. 25-27204-64		CHECK LIST NO. 5		REPORT NO. QPR-2039	
MISSILE MODEL WS-133		DCN H		REPORTED BY RS/JH/TV		PAGE NO.	
CONFIGURATION TAH		ADCN 39		CHECKED BY GVR		DATE 4/11/63	

LONGITUDINAL REFERENCE DATUM

LATERAL REFERENCE DATUM

WEIGHING DATA						DIMENSIONAL DATA							
REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION	GR. WT.	TARE	CORR.	NET WT.	DIM. INCHES	DIM. INCHES	DIM. INCHES	
R1	141.10	94.60		46.50	R5	126.00	88.55		37.45	A1	47.343	E1	80.000
R2	80.80	41.35		39.45	R6	95.80	47.45		48.35	A2	48.354	E4	80.000
R3	136.10	94.00		42.10	R7	127.75	87.85		39.90	B3	88.351	F2	120.000
R4	82.35	41.20		41.15	R8	90.80	47.30		43.50	B4	88.351	F3	119.999
TOTAL	440.35	271.15		169.20	TOTAL	440.35	271.15		169.20	C	50.000	G	100.000
										D	88.350	K	100.000

LONGITUDINAL C.G.				LATERAL C.G.				VERTICAL C.G.			
REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	46.50	47.343		R1	46.50	80.000		R5	37.45	80.000	
R2	39.45	47.354		R2	39.45	120.000		R6	48.35	120.000	
R3	42.10	88.351		R3	42.10	119.999		R7	39.90	119.999	
R4	41.15	88.351		R4	41.15	80.000		R8	43.50	80.000	
AS WGD	169.20	67.52	11,424.8	AS WGD	169.20	99.28	16,798.0	AS WGD	169.20	100.86	17,066.0



FIG. 1A NUMBER: 6501

SERIAL NUMBER: 0000160

CHECK LIST NO.		6.1.1.1 MISSILE WEIGHING CHECK LIST		RECORD OF CHECKING (DATE)									
DATE		MODEL MS-133		FINAL ASSEMBLY DRAWING NO. 21-50150		<table border="1"> <tr> <td>Mo</td> <td>4</td> </tr> <tr> <td>Day</td> <td>11</td> </tr> <tr> <td>Yr</td> <td>63</td> </tr> </table>		Mo	4	Day	11	Yr	63
Mo	4												
Day	11												
Yr	63												
ITEM NUMBER	SECTION 15	MISSILE NO. 708		COMPONENT									
MISSILE COMPONENT BODY SECTION GUIDED MISSILE COMPONENT PART NO. Noted				LAUNCH									
DESCRIPTION				PART NO.	WEIGHT	X ARM	Y ARM						
BODY SECTION ASSY				25-27201-64									
Interstage Assy - Structural				25-27203-13									
Instr Rack & Accelerometer				25-31659-4									
Marking Instl - Section 45				25-30131-									
Cover - Insulating				29-25598-1									
Cover - Insulating				29-24652-1									
Cover - Insulating (8)				29-23365-1									
Cover - Insulating (8)				29-23365-2									
Cover - Insulating (7)				29-23365-3									
Cover - Insulating (4)				29-23365-4									
Cover - Insulating				29-23365-5									
Cover - Insulating (4)				29-23365-6									
Seal - Forward (2)				29-23674-1									
Shield - Amplifier				29-23713-1									
Shield - Amplifier				29-23713-2									
Door - Access, Detonator				26-11878-1									
Door - Access, Ignitor Stage III				26-11885-1									
Door - Access, Detonator				26-12909-1									
Door - Access, Ordinance (3)				29-22671-1									
Closure Panel - Access, Ordinance				29-22672-1									
Door - Access, Ignitor Stage II				29-22361-1									
Closure Panel - Access, Booster Sdrt				29-22081-3									
Bolt - 100° Head (2)				BACB30EH-3-3									
Bolt - 100° Head (4)				BACB30EH-3-4									
Bolt - 100° Head (14)				BACB30EH-4-4									
Bolt - 100° Head (8)				BACB30EH-4-7									
Bolt - 100° Head (30)				BACB30EH-4-10									
Bolt - 100° Head (4)				BACB30EH-3-3									
Bolt - 100° Head				BACB30EH-3-6									

2-5550-0-21

BOEING

NO D2-13944-708

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FIG. 'A' NUMBER: 6501

**CHECK LIST NO.**

**FINAL ASSEMBLY DRAWING NO. 21-50150**

CHECK LIST NO.		6.1.1 MISSILE WEIGHING CHECK LIST		RECORD OF CHECKING (DATE)	
DATE		MODEL MS-133		Mo 4 Day 11 Yr 63	
		FINAL ASSEMBLY DRAWING NO. 21-50150			
SECTION 45		MISSILE NO. 708		COMPONENT	
ITEM NUMBER		DESCRIPTION		PART NO.	
		BODY SECTION ASSY (Continued)			
		(6)	Bolt - 1000 Head	BAC30EM-4-4	
		(3)	Bolt - 1000 Head	BAC30EM-4-5	
		(2)	Bolt - 1000 Head	BAC30EM-4-12	
			Insulation	BIS 5-62	
			Insulation	BIS 5-62	
		STRUCTURE WEIGHT:			
		AVCOAT WEIGHT:			
		BIS 5-62 WEIGHT:			

**Installed at Air Force Plant 77**

6.1.2 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2041	
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/12/63	
MODEL NO.		MS-133		DRAWING NO.		25-27204-64		PREPARED		R. ST. ROMAIN	
SERIAL NO.		0000161		U.O. MISSILE		713		APPROVED		G. ROBERTS	

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE							
		WEIGHT	X AXIS		Y AXIS		Z AXIS		
PART NO.	DESCRIPTION OF EQUIPMENT			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1	25-27204-64	Body Section (As Weighed)	168.95	67.54	11,411.0	99.14	16,750.0	100.76	17,024.0
2									
3									
4									
5		ADD:	0						
6									
7									
8		DEDUCT:	0						
9									
10									
11	25-27204-64	Body Section (Complete)	168.95	67.54	11,411.0	99.14	16,750.0	100.76	17,024.0
12									
13									
14									
15									
16									
17									
18									
19									
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6.1.3 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR <u>BOEING</u>		CONTRACT NO. <u>AF 04(694)-046</u>		REPORT NO. <u>OPR-2042</u>							
COMPONENT <u>INTERSTAGE 2-3</u>		LOT NO. <u>25-27204-64</u>		DATE <u>4-16-63</u>							
MODEL NO. <u>WS-133</u>		DRAWING NO. <u>U.O. MISSILE</u>		PREPARED <u>J. HILL</u>							
SERIAL NO. <u>0000162</u>		715		APPROVED <u>G. ROBERTS</u>							
EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE									
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS				
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT			
1											
2	25-27204-64 Body Section (As Weighed)	167.75	67.55	11,331.6	99.26	16,650.0	101.04	16,950.0			
3											
4											
5	ADD:	0									
6											
7											
8	DEDUCT:	0									
9											
10											
11	25-27204-64 Body Section (Complete)	167.75	67.55	11,331.6	99.26	16,650.0	101.04	16,950.0			
12											
13											
14											
15											
16											
17											
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6.1.4 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2043			
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/19/63			
MODEL NO.		WS-133		DRAWING NO.		25-27204-64		PREPARED		JIM HILL			
SERIAL NO.		0000163		U.O. MISSILE		717		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS			
						ARM		MOMENT		ARM		MOMENT	
1	25-27204-64	Body Section (As Weighed)		168.90	67.47	11,396.3	99.27	16,766.0	100.72	17,012.0			
2													
3													
4													
5		ADD:		0									
6													
7													
8		DEDUCT:		0									
9													
10													
11	25-27204-64	Body Section (Complete)		168.90	67.47	11,396.3	99.27	16,766.0	100.72	17,012.0			
12													
13													
14													
15													
16													
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## 6.1.5 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING		CONTRACT NO. AF 04(694)-046		REPORT NO. OPR-2040	
COMPONENT INTERSTAGE 2-3		LOT NO.		DATE 4-18-63	
MODEL NO. WS-133		DRAWING NO. 25-27204-64		PREPARED J. HILL	
SERIAL NO. 0000181		U.O. MISSILE 710		APPROVED G. ROBERTS	

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE						
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1								
2	25-27204-64 Body Section (As Weighed)	170.60	67.56	11,528.0	99.16	16,916.0	100.95	17,222.0
3								
4								
5	ADD:	0						
6								
7								
8	DEDUCT:	0						
9								
10								
11	25-27204-64 Body Section (Complete)	170.60	67.56	11,528.0	99.16	16,916.0	100.95	17,222.0
12								
13								
14								
15								
16								
17								
18								
19								
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6.1.6 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(64)-046		REPORT NO.		OPR-2047			
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/22/63			
MODEL NO.		WS-133		DRAWING NO.		25-27204-64		PREPARED		W. BAIRD			
SERIAL NO.		000182		U.O. MISSILE		816		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS			
						ARM		ARM		ARM		MOMENT	
1	25-27204-64	Body Section (As Weighed)	168.75	67.59	11,405.5	99.38	16,770.0	100.78	17,060.0				
2													
3													
4													
5		ADD:	0										
6													
7													
8		DEDUCT:	0										
9													
10													
11	25-27204-64	Body Section (Complete)	168.75	67.59	11,405.5	99.38	16,770.0	100.78	17,060.0				
12													
13													
14													
15													
16													
17													
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6.1.7 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(604)-046		REPORT NO.		OPR-2044	
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/19/63	
MODEL NO.		WS-133		DRAWING NO.		25-27204-64		PREPARED		W. BAIRD	
SERIAL NO.		0000183		U.O. MISSILE		731		APPROVED		G. ROBERTS	

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE						
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1								
2	Body Section (As Weighed)	170.80	67.54	11,535.3	99.20	16,944.0	100.84	17,224.0
3								
4								
5	AID:	0						
6								
7								
8	DEDUCT:	0						
9								
10								
11	Body Section (Complete)	170.80	67.54	11,535.3	99.20	16,944.0	100.84	17,224.0
12								
13								
14								
15								
16								
17								
18								
19								
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22								
23								
24								
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29								
30								
31								
32								



6.1.8 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OFF-2045	
COMPONENT		INTERPAGE 2-3		LOT NO.				DATE		4/23/63	
MODEL NO.		WS-133		DRAWING NO.		25-27204-64		PREPARED		W. BAIRD	
SERIAL NO.		0000184		U.O. MISSILE		745		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS			
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT		
1											
2	25-27204-64	Body Section (As Weighed)	167.90	67.48	11,330.5	99.30	16,672.0	100.79	16,922.0		
3											
4											
5		ADD:	0								
6											
7											
8		DEDUCT:	0								
9											
10											
11	25-27204-64	Body Section (Complete)	167.90	67.48	11,330.5	99.30	16,672.0	100.79	16,922.0		
12											
13											
14											
15											
16											
17											
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30											
31											
32											

## 6.1.9 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(64)-046		REPORT NO.		OPR-2048	
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/25/63	
MODEL NO.		MS-133		DRAWING NO.		25-27204-64		PREPARED		W. BAIRD	
SERIAL NO.		0000185		U.O. MISSILE		858		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS				
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT			
1											
2	25-27204-64 Body Section (As Weighed)	168.55	67.39	11,359.1	99.34	16,744.0	100.82	16,994.0			
3											
4											
5	ADD:	0									
6											
7											
8	DEDUCT:	0									
9											
10											
11	25-27204-64 Body Section (Complete)	168.55	67.39	11,359.1	99.34	16,744.0	100.82	16,994.0			
12											
13											
14											
15											
16											
17											
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BOEING

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6.1.1.10 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2046	
COMPONENT		INTERSTAGE 2-3		LOT NO.				DATE		4/19/63	
MODEL NO.		WS-133		DRAWING NO.		25-27204-64		PREPARED		W. BAIRD	
SERIAL NO.		0000186		U.O. MISSILE		776		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT		WEIGHT	X AXIS		Y AXIS		Z AXIS		
					ARM	MOMENT	ARM	MOMENT	ARM	MOMENT	
1											
2	25-27204-64	Body Section (As Weighed)		167.85	67.56	11,340.4	99.53	16,706.0	100.66	16,896.0	
3											
4											
5		ADD:		0							
6											
7											
8		DEDUCT:		0							
9											
10											
11	25-27204-64	Body Section (Complete)		167.85	67.56	11,340.4	99.53	16,706.0	100.66	16,896.0	
12											
13											
14											
15											
16											
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## 6.2.1 WEIGHT AND BALANCE CHANGE RECORD

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
ASSOCIATE CONTRACTOR <u>BOEING</u> CONTRACT NO. <u>AF04(694)-046</u> REPORT NO. <u>OPR-2039</u> COMPONENT <u>INTERSTAGE 1-2</u> LOT NO. <u>DATE 4/22/63</u> MODEL NO. <u>WS-133</u> DRAWING NO. <u>25-27201-11</u> PREPARED <u>T. VOEGL</u> SERIAL NO. <u>0000160</u> U.O. MISSILE <u>708</u> APPROVED <u>G. ROBERTS</u>									
1									
2	25-27201-11	Body Section (As Weighed)	362.20	77.80	28,180.3	100.88	36,250.5	100.07	36,244.4
3									
4									
5		ADD:	0						
6									
7									
8		DEDUCT:	0						
9									
10									
11	25-27201-11	Body Section (Complete)	362.20	77.80	28,180.3	100.88	36,250.5	100.07	36,244.4
12									
13									
14									
15									
16									
17									
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30									
31									
32									

SERIAL NO. 0000160				6.2.1 ACTUAL WEIGHT RECORD - INTERSTAGE 1-2			
U/O MISSILE 708		DRAWING NO. 25-27201-11		CHECK LIST NO. 7		REPORT NO. OPR-2039	
MISSILE MODEL WS-133		DCN H		REPORTED BY WB/JH/TV		PAGE NO.	
CONFIGURATION TAH		ADCN 41		CHECKED BY GVR		DATE 4/22/63	

LONGITUDINAL REFERENCE DATUM

VERTICAL REFERENCE DATUM

WEIGHING DATA				DIMENSIONAL DATA				
REACTION	GR. WT.	TARE	CORR.	NET WT.	DIM.	INCHES	DIM.	INCHES
R1	198.00	107.40		90.60	A1	49.072	E1	70.001
R2	217.15	119.00		98.15	A2	49.070	E4	70.002
R3	173.70	90.25		83.45	B3	109.070	F2	130.002
R4	191.95	101.95		90.00	B4	109.070	F3	130.000
TOTAL	780.80	418.60		362.20	C	50.000	G	100.000
					D		K	100.000

LONGITUDINAL C.G.				LATERAL C.G.				VERTICAL C.G.			
REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	90.60	49.072		R1	90.60	70.001		E5	96.80	70.001	
R2	98.15	49.070		R2	98.15	130.002		R6	91.80	130.002	
R3	83.45	109.070		R3	83.45	130.000		R7	89.70	130.000	
R4	90.00	109.070		R4	90.00	70.002		R8	83.90	70.002	
AS WGD	362.20	77.80	28,180.3	AS WGD	362.20	100.08	36,250.5	AS WGD	362.20	100.07	36,244.4

FIG. 'A' NUMBER: 6701

SERIAL NUMBER: 0000160

CHECK LIST NO.	DATE	MODEL WS-133	MISSILE WEIGHING CHECK LIST	RECORD OF CHECKING (DATE)				COMPONENT	MISSILE		
				No	Day	Yr					
			FINAL ASSEMBLY DRAWING NO. 21-50150								
ITEM NUMBER	SECTION 47	MISSILE NO. 708									
MISSILE COMPONENT BODY SECTION GUIDED MISSILE COMPONENT PART NO. Noted											
DESCRIPTION	PART NO.	WEIGHT	X ARM	Y ARM	Z ARM	BASIC WEIGHTS	AS WEIGHED	REMOTE SITE SHIPMENT	AS RECEIVED	REMOTE SITE	LAUNCH
BODY SECTION ASSY	25-27201-11										
Interstage Assy - Structural	25-27200-21										
Seal	25-27201-4										
Seal	25-27201-5										
Seal	25-27201-6										
Seal	25-27201-7										
Shield - Assy of Insulated	25-27201-8										
Shield - Time Delay Booster	25-29544-1										
Door - Access, Stage Separation	26-11886-1										
Door - Access, Booster	26-11888-1										
Door Assy - Safe & Arm	29-20567-1										
Door - Ordnance Access	29-20607-1										
Door - Ordnance (Chem-timer) Assy of	29-22311-1										
Cover - Panel Tie	29-23654-1										
Cover - Panel Tie	29-23654-2										
Plug - Access Hole	29-23663-2										
Panel - Insulation	29-25565-1										
Door - CFI Equipment Access	25-30938-1										
Panel - Insulation	25-33084-1										
Marking Instl - Section 17	25-30134-2										
Cover - Receptacle	29-22725-1										
Cover - Receptacle	29-22725-2										
Cover - Receptacle	29-22725-3										
Bolt - 100° Head	BACB30EM-3-8										
Bolt - 100° Head	BACB30EM-4-11										
Bolt - 100° Head	BACB30EM-4-9										
Bolt - 100° Head	BACB30EM-4-5										
Bolt - 100° Head	BACB30EM-2-4										
Bolt - 100° Head	BACB30EM-3-3										

2-5550-0-21

BOEING

NO. D2-1394-708

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6.2.2 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.		OPR-2041	
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		4-18-63	
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		J. HILL	
SERIAL NO.		0000161		U.O. MISSILE		713		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS				
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT			
1											
2	25-27201-11 Body Section (As Weighed)	356.05	77.62	27,635.6	100.13	35,652.0	100.38	35,739.0			
3											
4											
5	ADD:	0									
6											
7											
8	DEDUCT:	0									
9											
10											
11	25-27201-11 Body Section (Complete)	356.05	77.62	27,635.6	100.13	35,652.0	100.38	35,739.0			
12											
13											
14											
15											
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## 6.2.3. WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING		CONTRACT NO.	AF 04(694)-046	REPORT NO.	OPR-2042
COMPONENT INTERSTAGE 1-2		LOT NO.		DATE	4-17-63
MODEL NO. WS-133		DRAWING NO.	25-27201-11	PREPARED	J. HILL
SERIAL NO. 0000162		U.O. MISSILE	715	APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1									
2	25-27201-11	Body Section (As Weighed)	361.40	78.05	28,207.1	99.94	36,119.5	100.18	36,203.5
3									
4									
5		ADD:	0						
6									
7									
8		DEDUCT:	0						
9									
10									
11	25-27201-11	Body Section (Complete)	361.40	78.05	28,207.1	99.94	36,119.5	100.18	36,203.5
12									
13									
14									
15									
16									
17									
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6.2.4 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OFR-2043			
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		4/12/63			
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		T. VOGEL			
SERIAL NO.		0000163		U.O. MISSILE		717		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS					
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT				
1													
2	25-27201-11	Body Section (As Weighed)	355.45	77.92	27,696.1	99.90	35,508.0	100.22	35,621.9				
3													
4													
5		ADD:	0										
6													
7													
8		DEDUCT:	0										
9													
10													
11	25-27201-11	Body Section (Complete)	355.45	77.92	27,696.1	99.90	35,508.0	100.22	35,621.9				
12													
13													
14													
15													
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## 6.2.5 WEIGHT AND BALANCE CHANGE RECORD

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE								
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT	X AXIS		Y AXIS		Z AXIS	
					ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1										
2	25-27201-11	Body Section (As Weighed)		357.30	77.94	27,846.9	99.95	35,712.5	100.34	35,850.5
3										
4										
5			ADD:	0						
6										
7										
8			DEDUCT:	0						
9										
10										
11	25-27201-11	Body Section (Complete)		357.30	77.94	27,846.9	99.95	35,712.5	100.34	35,850.5
12										
13										
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15										
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ASSOCIATE CONTRACTOR BOEING  
 COMPONENT INTERSTAGE 1-2  
 MODEL NO. WS-133  
 SERIAL NO. 0000181

CONTRACT NO. AF04(694)-046  
 LOT NO. 25-27201-11  
 DRAWING NO. U.O. MISSILE  
 U.O. MISSILE 710

REPORT NO. OPR-2040  
 DATE 4/12/63  
 PREPARED JIM HILL  
 APPROVED G. ROBERTS

6.2.6 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2047	
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		4/24/63	
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		R. ST. ROMAIN	
SERIAL NO.		0000182		U.O. MISSILE		816		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.	DESCRIPTION OF EQUIPMENT			WEIGHT	X AXIS		Y AXIS		Z AXIS		
					ARM	MOMENT	ARM	MOMENT	ARM	MOMENT	
1	25-27201-11	Body Section (As Weighed)			357.75	77.99	27,902.0	99.87	35,728.9	100.25	35,864.0
2											
3											
4											
5		ADD:			0						
6											
7											
8		DEDUCT:			0						
9											
10											
11	25-27201-11	Body Section (Complete)			357.75	77.99	27,922.0	99.87	35,728.9	100.25	35,864.0
12											
13											
14											
15											
16											
17											
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6.2.7 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2044	
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		5-6-63	
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		R. HOLCOMB	
SERIAL NO.		0000183		U.O. MISSILE		731		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS	
						ARM		MOMENT		ARM	
1	25-27201-11	Body Section (As Weighed)		357.15		77.92	27,830.5	100.00	35,714.0	100.52	35,899.9
2											
3											
4											
5		ADD:		0							
6											
7											
8		DEDUCT:		0							
9											
10											
11	25-27201-11	Body Section (Complete)		357.15		77.92	27,830.5	100.00	35,714.0	100.52	35,899.9
12											
13											
14											
15											
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## 6.2.8 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR BOEING		CONTRACT NO.	REPORT NO.	
COMPONENT	INTERSTAGE 1-2	AF04(694)-046	OPR-2045	
MODEL NO.	MS-133	DRAWING NO.	DATE	4/23/63
SERIAL NO.	0000184	U.O. MISSILE	PREPARED	JIM HILL
			APPROVED	G. ROBERTS

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE						
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1								
2	25-27201-11							
3	Body Section (As Weighed)	357.00	78.09	27,877.2	99.88	35,655.5	100.43	35,853.5
4								
5	ADD:	0						
6								
7								
8	DEDUCT:	0						
9								
10								
11	25-27201-11							
12	Body Section (Complete)	357.00	78.09	27,877.2	99.88	35,655.5	100.43	35,853.5
13								
14								
15								
16								
17								
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19								
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62.9 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2048	
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		4/29/63	
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		R. ST. HOWAIN	
SERIAL NO.		0000185		U.O. MISSILE		858		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS			
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT		
1	25-27201-11	Body Section (As Weighed)	359.35	77.96	28,013.5	100.01	35,937.0	100.38	36,072.0		
2											
3											
4											
5		ADD:	0								
6											
7											
8		DEDUCT:	0								
9											
10											
11	25-27201-11	Body Section (Complete)	359.35	77.96	28,013.5	100.01	35,937.0	100.38	36,072.0		
12											
13											
14											
15											
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## 6.2.10 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2046	
COMPONENT		INTERSTAGE 1-2		LOT NO.				DATE		4/19/63	
MODEL NO.		WS-133		DRAWING NO.		25-27201-11		PREPARED		R. ST. ROMAIN	
SERIAL NO.		0000186		U.O. MISSILE		776		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS	
						ARM		MOMENT		ARM	
1	25-27201-11	Body Section (As Weighed)		358.65		78.00	27,976.2	99.86	35,815.9	100.29	35,969.0
2											
3											
4											
5		ADD:		0							
6											
7											
8		DEDUCT:		0							
9											
10											
11	25-27201-11	Body Section (Complete)		358.65		78.00	27,976.2	99.86	35,815.9	100.29	35,969.0
12											
13											
14											
15											
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## 6.3.1 WEIGHT AND BALANCE CHANGE RECORD

ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2039	
COMPONENT		SKIRT		LOT NO.				DATE		4/9/63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		W. BAIRD	
SERIAL NO.		0000160		U.O. MISSILE		708		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS				
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT			
1											
2	25-27207-3 Body Section (As Weighed)	338.25	69.21	23,409.6	100.47	33,984.4	100.77	34,085.4			
3											
4											
5	ADD:	0									
6											
7											
8	DEDUCT:	0									
9											
10											
11	25-27207-3 Body Section (Complete)	338.25	69.21	23,409.6	100.47	33,984.4	100.77	34,085.4			
12											
13											
14											
15											
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SERIAL NO. 0000160		6.3.1 ACTUAL WEIGHT RECORD - SKIRT		REPORT NO. OPR-2039	
U/O MISSILE 708		DRAWING NO. 25-27207-		CHECK LIST NO. 9	
MISSILE MODEL WS-133		DCN E		REPORTED BY RS/WB	
CONFIGURATION TAH		ADCN 26		CHECKED BY GVR	
				DATE 4/9/63	

LONGITUDINAL REFERENCE DATUM

LATERAL REFERENCE DATUM

VERTICAL REFERENCE DATUM

WEIGHING DATA				DIMENSIONAL DATA			
REACTION	GR. WT.	TARE	CORR.	NET WT.	REACTION	DIM. INCHES	DIM. INCHES
R1	194.40	81.95		112.45	A1	51.175	E5
R2	79.00	22.65		56.35	A2	51.172	E7
R3	225.45	166.40		59.05	B3	87.173	F6
R4	338.85	228.45		110.40	B4	87.173	F8
TOTAL	837.70	499.45		338.25	C		G
					D		K

LONGITUDINAL C.G.				LATERAL C.G.				VERTICAL C.G.			
REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT	REACTION	NET WT.	ARM	MOMENT
R1	112.45	51.175		R5	49.10	60.997		R5	49.10	61.002	
R2	56.35	51.172		R6	116.70	139.001		R6	116.70	61.005	
R3	59.05	87.173		R7	118.00	61.008		R7	118.00	139.003	
R4	110.40	87.173		R8	54.45	139.009		R8	54.45	139.001	
AS WGD	338.25	69.21	23,409.6	AS WGD	338.25	100.47	33,984.4	AS WGD	338.25	100.77	34,085.4



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6.3.2 WEIGHT AND BALANCE CHANGE RECORD									
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.	
COMPONENT		SKIRT		LOT NO.				DATE	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED	
SERIAL NO.		0000161		U.O. MISSILE		713		APPROVED	
								G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE					
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS		
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT	
1	25-27207-11 Body Section (As Weighed)	336.85	69.28	23,336.1	100.42	33,827.6	100.52	33,859.6	
2									
3									
4									
5	ADD:	0							
6									
7									
8	DEDUCT:	0							
9									
10									
11	25-27207-11 Body Section (Complete)	336.85	69.28	23,336.1	100.42	33,827.6	100.52	33,859.6	
12									
13									
14									
15									
16									
17									
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BOEING

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6.3.3 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2042	
COMPONENT		SKIRT		LOT NO.				DATE		4/12/63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		W. BAIRD	
SERIAL NO.		0000162		U.O. MISSILE		715		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT	X AXIS		Y AXIS		Z AXIS		
					ARM	MOMENT	ARM	MOMENT	ARM	MOMENT	
1	25-27207-3	Body Section (As Weighed)		337.60	69.39	23,424.9	100.41	33,897.8	100.57	33,952.0	
2											
3											
4											
5		ADD:		0							
6											
7											
8		DEDUCT:		0							
9											
10											
11	25-27207-3	Body Section (Complete)		337.60	69.39	23,424.9	100.41	33,897.8	100.57	33,952.0	
12											
13											
14											
15											
16											
17											
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6.3.4 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.		OPR-2043			
COMPONENT		SKIRT		LOT NO.				DATE		4-16-63			
MODEL NO.		WS-133		DRAWING NO.		25-25207-3		PREPARED		J. HILL			
SERIAL NO.		0000163		U.O. MISSILE		717		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS			
						ARM		MOMENT		ARM		MOMENT	
1	25-25207-3	Body Section (As Weighed)		340.95		69.31	23,630.5	100.40	34,230.9	100.52	34,273.4		
2													
3													
4													
5		ADD:		0									
6													
7													
8		DEDUCT:		0									
9													
10													
11	25-25207-3	Body Section (Complete)		340.95		69.31	23,630.5	100.40	34,230.9	100.52	34,273.4		
12													
13													
14													
15													
16													
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6.3.5 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2040			
COMPONENT		SKIRT		LOT NO.				DATE		4/10/63			
MODEL NO.		MS-133		DRAWING NO.		25-27207-3		PREPARED		H. CHRISTIANSEN			
SERIAL NO.		0000181		U.O. MISSILE		710		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS					
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT				
1													
2	25-27207-3	Body Section (As Weighed)	337.50	69.32	23,396.4	100.59	33,950.3	100.58	33,946.0				
3													
4													
5		ADD:	0										
6													
7													
8		DEDUCT:	0										
9													
10													
11	25-27207-3	Body Section (Complete)	337.50	69.32	23,396.4	100.59	33,950.3	100.58	33,946.0				
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
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26													
27													
28													
29													
30													
31													
32													

6.3.6 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.		OPR-2047	
COMPONENT		SKIFT		LOT NO.				DATE		4-19-63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		T. VOGEL	
SERIAL NO.		0000182		U.O. MISSILE		816		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS				
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT			
1											
2	Body Section (As Weighed)	338.05	69.21	23,397.6	100.54	33,987.8	100.49	33,971.8			
3											
4											
5	ADD:	0									
6											
7											
8	DEDUCT:	0									
9											
10											
11	Body Section (Complete)	338.05	69.21	23,397.6	100.54	33,987.8	100.49	33,971.8			
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
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29											
30											
31											
32											



6.3.7 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2044	
COMPONENT		SKIRT		LOT NO.				DATE		4/24/63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		JIM HILL	
SERIAL NO.		0000183		U.O. MISSILE		731		APPROVED		G. ROBERTS	
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE							
LINE	PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS			
				ARM	MOMENT	ARM	MOMENT	ARM	MOMENT		
1											
2	25-27207-3	Body Section (As Weighed)	338.40	69.44	23,500.0	100.48	34,001.2	100.37	33,965.8		
3											
4											
5		ADD:	0								
6											
7											
8		DEDUCT:	0								
9											
10											
11	25-27207-3	Body Section (Complete)	338.40	69.44	23,500.0	100.48	34,001.2	100.37	33,965.8		
12											
13											
14											
15											
16											
17											
18											
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6.3.8 WEIGHT AND BALANCE CHANGE RECORD													
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.		OPR-2045			
COMPONENT		SKIRT		LOT NO.				DATE		4-17-63			
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		R. HOLCOMB			
SERIAL NO.		0000184		U.O. MISSILE		745		APPROVED		G. ROBERTS			
EQUIPMENT CHANGE RECORD				WEIGHT AND BALANCE									
PART NO.		DESCRIPTION OF EQUIPMENT		WEIGHT		X AXIS		Y AXIS		Z AXIS			
						ARM		MOMENT		ARM		MOMENT	
1	25-27207-3	Body Section (As Weighed)	341.45	69.04	23,573.4	100.18	34,206.7	100.57	34,338.9				
2													
3													
4													
5		ADD:	0										
6													
7													
8		DEDUCT:	0										
9													
10													
11	25-27207-3	Body Section (Complete)	341.45	69.04	23,573.4	100.18	34,206.7	100.57	34,338.9				
12													
13													
14													
15													
16													
17													
18													
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30													
31													
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6.3-9 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF04(694)-046		REPORT NO.		OPR-2048	
COMPONENT		SKIRT		LOT NO.				DATE		4/26/63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		R. HOLCOMB	
SERIAL NO.		0000185		U.O. MISSILE		858		APPROVED		G. ROBERTS	

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE						
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1								
2	25-27207-3 Body Section (As Weighed)	336.90	69.27	23,336.8	100.51	33,826.8	100.64	33,905.3
3								
4								
5	ADD:	0						
6								
7								
8	DEDUCT:	0						
9								
10								
11	25-27207-3 Body Section (Complete)	336.90	69.27	23,336.8	100.51	33,826.8	100.64	33,905.3
12								
13								
14								
15								
16								
17								
18								
19								
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29								
30								
31								
32								

6.3.10 WEIGHT AND BALANCE CHANGE RECORD											
ASSOCIATE CONTRACTOR		BOEING		CONTRACT NO.		AF 04(694)-046		REPORT NO.		OPR-2046	
COMPONENT		SKIRT		LOT NO.				DATE		4-18-63	
MODEL NO.		WS-133		DRAWING NO.		25-27207-3		PREPARED		J. HILL	
SERIAL NO.		0000186		U.O. MISSILE		776		APPROVED		G. ROBERTS	

EQUIPMENT CHANGE RECORD		WEIGHT AND BALANCE						
PART NO.	DESCRIPTION OF EQUIPMENT	WEIGHT	X AXIS		Y AXIS		Z AXIS	
			ARM	MOMENT	ARM	MOMENT	ARM	MOMENT
1								
2	Body Section (As Weighed)	335.55	69.38	23,280.4	100.47	33,714.1	100.38	33,682.5
3								
4								
5	ADD:	0						
6								
7								
8	DEDUCT:	0						
9								
10								
11	Body Section (Complete)	335.55	69.38	23,280.4	100.47	33,714.1	100.38	33,682.5
12								
13								
14								
15								
16								
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6.4

## BASE HEAT DEFLECTORS

Serial No.	25-25878-2	25-25877-2	25-25876-2
0000160	6.16 lb.	20.54 lb.	21.39 lb.
0000161	6.18	20.47	21.32
0000162	6.25	20.45	21.36
0000163	6.23	20.92	21.34
0000181	6.10	20.51	21.26
0000182	6.20	20.46	21.29
0000183	6.11	20.55	21.39
0000184	6.17	20.47	21.40
0000185	6.16	20.39	21.39
0000186	6.12	20.36	21.42

REV SYM. \_\_\_\_\_

**BOEING**

NO. D2-13944-708

SECT.

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